DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
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REPLY TO
ATTENTION OF

JUL 16 2012

Planning Programs and Project
Management Division

Sean Sheldrake, RPM
USEPA, Region 10
Environmental Cleanup Office
1200 Sixth Avenue, Suite 900, ECL-110
Seattle, WA 98101-3140

Dear Mr. Sheldrake:

Thank you for the opportunity to review the draft Engineering Evaluation/Cost Analysis (EE/CA) for the GASCO Sediment Cleanup Site. Enclosed please find the U.S. Army Corps of Engineers' (USACE) detailed comments on this document.

The USACE is seriously concerned that the Draft EE/CA does not address substantial contamination in sediments at the U.S. Government Moorings (U.S. Moorings) site that is a direct result of historic activity on the GASCO property. We believe that there is significant contamination within the sediments at the Moorings that meets the definition of substantial product that NW Natural is required to remediate under their current consent order. We believe the spirit of that order, which places an emphasis on removal of product as principal threat materials, is being ignored in the EE/CA. Much of the substantial product found at depth at the U.S. Moorings would be disturbed and exposed by maintenance dredging activities or prop wash from berthing. We have highlighted in our comments where previous investigations have determined substantial product exists at the U.S. Moorings. Other cores supporting a separate supplemental investigation have previously been included in the USACE's responses as required under Section 104(e) of CERCLA. Our office is preparing a summary of this supplemental data and data from the U.S. Moorings Remedial Investigation relevant to the GASCO EE/CA, and will provide to your office at a later date.

The navigation mission of the USACE, including dredge maintenance at the U.S. Moorings, is expected to continue in the foreseeable future. Consequently, the USACE needs to restore the use of the docks at the U.S. Moorings. Berth dredging and dock repairs have both been placed on hold because of sediment contamination. As the EE/CA indicates, significant over dredging to remediate sediments can weaken dock structures. Assuming EPA chooses an alternative that includes significant sediment and contaminant removal, including at the U.S. Moorings, the USACE suggests that dock removal and replacement be considered during planning to facilitate a more complete remedy. The USACE is willing to work with NW Natural and EPA to evaluate alternatives to achieve this result.

Like the Portland Harbor draft Feasibility Study, the EE/CA uses specific marker contaminants to drive remedial boundaries and calculate risks. We have not evaluated models in the EE/CA that calculate risk reduction, but believe there are other significant MGP related contaminants besides BaPEq that if included in calculations would affect the boundaries of a remedy at the GASCO site. Finally, the EE/CA states that a no action remedy is protective over time regardless of the presence of substantial product or other MGP wastes. That conclusion would relate to models we have not fully reviewed, but believe EPA should carefully evaluate.

If you have any questions, please ccontact me at 503-808-4725 or email at christine.m.budai@usace.army.mil. Once again, we appreciate having the opportunity to provide the enclosed comments to you. A copy of this letter has been provided to Lori Cora (cora.lori@epa.gov), Mark Ader (ader.mark@epa.gov), Jim Anderson (anderson.jim@deq.state.or.us), Dana Bayuk (bayuk.dana@deq.state.or.us), Bob Wyatt (rjw@nwnatural.com), and Patty Dost (pdost@pearllegalgroup.com).

Sincerely,

Christine M. Budai

Christine M. Budai, RPG, PMP
Project Manager

Enclosure

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| Date: | 16 July 2012 |
| Reviewer Project Location: | U.S. Government Moorings - Portland, Oregon |
| Review Document Name: | Draft Engineering Evaluation/Cost Estimate Gasco Sediments Cleanup Site |

**General Comments**

Although the GASCO Administrative Settlement Agreement and Order on Consent for Removal Action and the Statement of Work from 2009 discuss preparation of an interim removal action, it is our understanding this action is planned to be a permanent remedy paired with the Portland Harbor action. However, this EE/CA appears to present a final sediment cleanup action that does not go beyond remediation of the most contaminated areas that Gasco delineated as "Substantial Presence of Product" based on the definition provided in Section 4.6.3.1 of the Gasco Draft Work Plan dated October 2009. The detailed analysis of the EE/CA alternatives also does not appear to account for the current and future impact on the U.S. Government Moorings (U.S. Moorings) from potential contaminated sediment release associated with vessel scour and the need for maintenance dredging of highly contaminated sediments.

The USACE takes issue with the remedies discussed in the EE/CA and does not agree that these remedies are acceptable for final remedy because it leaves in place contaminated sediment within the U.S. Moorings property boundary. This sediment which is considered by the USACE to fit the definition of "Substantial Presence of Product", along with other highly contaminated and potentially mobile sediment, is not fit to remain as part of the final remedy in an active berthing area. Review of sediment cores from the U.S. Moorings show that the area that meets "Substantial Presence of Product" includes all of the U.S. Moorings dock and extends at least 250 ft northwest of the dock. The USACE has reviewed the methodologies and definitions within the Statement of Work, Work Plan, and EE/CA intended to delineate the Project Area Boundary for the Gasco Site final sediment remediation. In contrast to the technology determinations applied within the EE/CA, the USACE concludes that the focus on substantial product removal associated with areas which may be mobilized requires the use of removal versus capping or natural recovery technologies within the U.S. Moorings dock and berthing areas.

The U.S. Moorings dock is currently not in use due to the presence of substantial contaminated sediment which could resuspend through vessel scour or maintenance dredging activities. Therefore, in order for the USACE to endorse the final sediment remedy associated with the Gasco EE/CA, the proposal will need to address the removal of contaminated sediments that could resuspend by use of USACE vessels based on current sediment elevations and on contaminated sediments at depths that account for maintenance dredging needed in order for the U.S. Moorings facility to be functional.

The EE/CA ignores the use of the inner U.S. Moorings dock berth and much of the riverward berth as potentially requiring maintenance dredging. Both berths were considered for dredging in 1989 but have not been dredged because of contamination. In 2002, the Corps modified berthing actions at the U.S. Moorings to minimize use of the inner berth due to infill and propeller scour. In 2006, the Corps deferred major dock maintenance because dock repair was not effective if the shallowing berths could not be dredged. Hence, since 2009, silting berths and poor dock conditions required the USACE to seek alternate berth space, resulting in the USACE leasing berth space at a cost of over $360,000 per year at Terminal 2. The subsequent inefficiencies of conducting vessel maintenance on site while the vessels are berthed in another location cause an increased vessel maintenance cost of more than $400,000 per year. All of these costs are absorbed by the projects that require use of the dredges. This usually means less material can be removed because of increases in dredge rate costs. Projects served by the dredges include the recently deepened Columbia River Navigation Channel, the maintenance of which is also being adversely affected by U.S. Moorings cleanup costs. The USACE offers this comment so EPA may understand the impacts of not being able to maintain the berths at the U.S. Moorings due to the presence of sediment contamination on site, the bulk of which did not originate from the U.S. Moorings property.

The USACE has maintenance needs at the U.S. Moorings site, including berth dredging and dock repairs, which have been deferred as a result of the Portland Harbor sediment contamination. Assuming EPA chooses an alternative that includes significant sediment and contaminant removal, including at the U.S. Moorings, the USACE suggests that dock removal and replacement be considered during planning to facilitate a more complete remedy. The USACE is willing to work with NW Natural and EPA to evaluate alternatives to achieve this result.

**Specific Comments**

**Comment #1 – *Section 1.2.3*** - The Project Area, which defines the preliminary lateral and vertical extent of the remedial action area (Figure 1.2.3-1), does not include all U.S. Moorings sediments that relate to substantial presence of product as defined by the sediment cores included in the U.S. Moorings RI. Additional areas should include RI sediment sample locations 18, 19, 20, 23, 24, and 28 and must extend to a core that does not contain substantial product as required by the Statement of Work. Each of the six U.S. Moorings RI cores noted above meet at least Criterion 1 of the Substantial Presence of Product definition in the SOW which includes: *Bands of product, layers of product, "saturated" sediments, "stained" sediments, and/or seams of product that are greater than 2 inches thick.* The Project Area and technology assignments within the EE/CA need to account for the potential for substantial contamination release to the Willamette from vessel scour in the U.S. Moorings active berthing area.

**Comment #2 – *Section 1.2.4.4*** – The report notes that the EE/CA selected remedy will be included in the Portland Harbor Site Proposed Plan and ROD for the Portland Harbor Site which will enable EPA to determine the appropriate sequencing for construction of the approved Gasco Sediment Site remediation action. The report should note the expected year for sediment remediation to begin. Given that this remedy is likely not to commence for at least 2 years, it appears that there is sufficient time for Gasco to incorporate relevant U.S. Moorings evaluation within the Final EE/CA sediment remedy as requested in USACE comments.

**Comment #3 –*Section 1.2.5***

i. ***5th bullet.*** This bullet states that the remedial alternatives are tailored to account for current and future site uses, however, the remedial alternatives ***do not*** sufficiently account for required current and future site use at the U.S. Moorings docks to enable the USACE navigation mission to be accomplished.

ii. ***8th bullet.*** Future exposures and risks posed by the potential presence of mobile product into the sediment was stated to have been evaluated; however, this was not evaluated sufficiently for the U.S. Moorings ship movement near docks and potential contaminant release related to required dredging and vessel scour in these areas.

**Comment #4 –*Section 1.3***

i. ***Appendix E – Draft Fate and Transport Modeling –*** The model should include all of the U.S. Moorings area in the analysis with consistent gridding throughout. Currently, the grid size used in the model is larger within the U.S. Moorings area, which is unacceptable. In addition, surface and subsurface contamination in the far northwest portion of the U.S. Moorings property are currently not included in the Gasco Sediment Site Area of Interest (as defined in Appendix E), and need to be discussed so that it is clear that the EE/CA addresses all related ecological and human risk associated with this contamination.

ii. ***Appendix I – Draft Evaluation of Isolated Cap Effectiveness*** – This evaluation should include all in-water areas of the U.S. Moorings. The evaluation needs to account for erosion forces related to current and future vessel scour necessary at the U.S. Moorings to meet mission requirements.

**Comment #5 – *Section 2.2.2, pg 14. 1st paragraph.*** – The use of the term "*periodic*" is incorrect as related to the U.S. Moorings dock usage. Sediment contamination at the U.S. Moorings is adversely impacting the operations of the USACE' Pacific Coast dredge fleet and reduces the ability of the USACE to accomplish its navigation mission. The docks at the U.S. Moorings presently serve two seagoing dredges with the requirement to simultaneously berth both

dredges an average of five times per year. Berthing typically occurs from September through March during some of the lowest water stages of the year. This requires the use of two berths, one riverward and one landward of the dock on the edge of the channel. Neither berth has been dredged since 1981, and because of sediment contamination, the Corps has postponed dredging planned as early as 1989. Much of the substantial product found at depth at the U.S. Moorings would be disturbed and exposed by maintenance dredging activities or prop wash from berthing. Consequently, the USACE has been required to seek other berth space since 2009 as a result of silting berths and poor dock conditions. The USACE has leased berth space at a cost of over $360,000 per year at Terminal 2. The resulting inefficiencies of conducting vessel maintenance on site with the vessels in another location cause an increased vessel maintenance cost of more than $400,000 per year. All of these costs are absorbed by the projects dredged by the dredges. Increased maintenance costs result in increased dredging rates and result in less material dredged. In addition, costs related to cleanup at the U.S. Moorings are directly borne by the Columbia and Lower Willamette Project, reducing the amount of funds available to maintain the lower Columbia River.

**Comment #6– *Section 2.2.3. Page15, 1st paragraph.*** *"As discussed later in this EE/CA, sediment remediation is not expected to affect navigation to the U.S. Moorings Dock just downstream of the Gasco Sediments Site. Access to this dock is generally maintained to -23.8 feet NAVD88 (-30 feet CRD)."* The USACE takes issue with this statement as navigation at the U.S. Moorings has already been affected and is still being affected by the contaminated sediment. The USACE expects that contamination below the U.S. Moorings docks will need to be removed to allow for necessary current and future use of the U.S. Moorings dock area. Given that an active remedy including overdredging and capping near and beneath the U.S. Moorings dock could negatively impact the dock's structural integrity, the USACE is interested in coordinating with NW Natural for potential dock removal/replacement to facilitate more complete contaminated sediment removal.

**Comment #7 – *Section 2.3.1.1***

i. ***pg 13, 1st paragraph,*** *"The groundwater remedial action objective for the hydraulic containment system is to prevent discharge of upland groundwater to the Willamette River, as measured by analyzing groundwater hydrology data from Gasco and Siltronic property wells and the river*." This RAO needs to include U.S. Moorings hydraulic containment.

ii. ***Pg 14, 1st sentence*** "*…source control is scheduled in 2012, with final operational performance achieved by January 2014.*" There needs to be a comment here noting how discharges along the U.S. Moorings property related to contaminated groundwater from Gasco will be addressed.

iii. ***Pg 14, 1st full paragraph.*** Figure 2.3.1.1-1 does not show offshore seepage control on the U.S. Moorings property which needs to be included in the remedy.

**Comment #8 – *Section 2.4.3.1*** – *"In addition, local prop wash scour in front of and near the main dock at the initial Project Area would be expected due to barge and ship docking*" The U.S. Moorings current and future vessel usage and impact on sediment remediation needs to be incorporated into this EE/CA and discussed here.

**Comment #9– *Section 2.5.1.1, pg 24, 4th bullet.*** Cyanide, including total in sediment and total, available, and free forms in water samples needs to be discussed regarding how the proposed alternatives will prevent recontamination of sediment, migration, and ecological and human risk.

**Comment #10 - *Section 2.5.1.2. last paragraph of pg 25 and 1st sentence of 26.*** Does EPA concur with the finding that "cyanide is not being converted to measurable levels of free cyanide in any water matrix samples in the Project Area" or nearby U.S. Moorings areas so that cyanide alone should not be a driver chemical for this EE/CA or any other related U.S. Moorings actions?

**Comment #11 - *Section 2.5.2. pg 26, 4th bullet.*** ***"****Lower concentrations are generally found outside this area (Project Area) except that subsurface concentration of cyanide on the northern end of the shoreline are relatively high in some*

*intervals."* Clarify the extent of these elevated cyanide concentrations and whether sufficient research has been conducted to ensure these areas do not contain the geochemical conditions necessary for conversion to free cyanide.

**Comment #12 - *Section 2.5.3***

i. ***1st paragraph*** - *"The definition of substantial product does not include every incidence of product observation at the Project Area.."* Please clarify this sentence, it sounds like there is more substantial product than the definition will identify. Does EPA concur with this sentence and agree that not all substantial product needs to be accounted for in this EE/CA? The USACE believes substantial product exists at the U.S. Moorings site and needs to be addressed within this EE/CA.

ii. ***2nd paragraph-*** "*This was only done for supporting context and not to actually define substantial product in these borings because the SOW definition of substantial product only applies to sediments below 13 feet NAVD88*." The criteria for contamination between 13 ft and 36 ft should be stated since it appears that such areas will be remediated as part of the EE/CA.

iii. ***4th paragraph.*** Figure 2.5.3-1 Needs to be updated to account for substantial product under the U.S. Moorings dock and up to 250 ft NW of the dock.

**Comment #13 – *Section 2.5.5. pg 32. 2nd full paragraph.*** *"MGP DNAPL and tar are present in several areas underlying the Gasco and Siltronic properties. The DNAPL present on both sites is a potential ongoing source of dissolved contamination in the fill and alluvial WBZs, including PAHs, BETX free cyanide, and total cyanide."* Include the U.S. Moorings in this statement and discussion since the U.S. Moorings is also heavily impacted by this groundwater plume and related contaminated product.

**Comment #14 - *Section 3.1 - Numbered items 7 and 8*** – The phrase "*unacceptable levels*" to describe migration and recontamination of sediments should be more clearly defined here so it is clear what levels are unacceptable.

**Comment #15 – *Section 3.4***

i. ***RAO 3 - pg 59, 1st paragraph*** "*Site will include institutional controls that would prevent people from digging for shellfish in the remediation area.*" It is the USACE's understanding that ICs are unacceptable as the long term solution for preventing exposure to contaminated sediments, fish, or shellfish. Please clarify.

ii. ***RAO 5 – pg 61, 1st full paragraph.*** *"Downgradient detached plumes would be expected to remain after upland source controls are in place but dissipate or naturally attenuate over time once the source has been controlled."* The U.S. Moorings should be mentioned specifically and the text should clarify what downgradient "*detached plumes*" this is referencing.

**Comment #16 – *Section 4.3.3 – pg 85.*** *"Because all sediments can be reliably contained, no PTM areas were identified in the FS."* The U.S. Moorings sediment cannot be reliably contained without dredging to maintain elevations needed in berthing areas for vessel access and to prevent unacceptable vessel scour. The document needs to be revised based on this information.

**Comment #17 – *Section 4.4.2.***

i. "*There are three areas for which the CBRA boundary shown on Figure 4.4.2-1 does not coincide with the existing surface Thiessen polygon boundaries. The rationale for this deviation is described as follows. Working from the downstream to upstream boundary of the CBRA, the first area where the CBRA boundary deviates from the surface Thiessen polygon boundaries occurs at the furthest downstream boundary of the CBRA, where it intersects the shoreline between the NW Natural Gasco and US Mooring property boundary. At this location, the CBRA boundary was drawn along the edge of the existing dock structure, which is consistent with the Portland Harbor draft FS (Anchor QEA 2012a) procedures for delineating CBRA*" The dock structure is not a physical barrier to contamination and elevated contamination continues under and northwest of this structure. Therefore, this is an unacceptable deviation, especially since the U.S. Moorings is interested in coordinating with NW Natural to time the potential removal of the U.S. Moorings dock in order to

facilitate remediation of nearby contaminated sediments. Polygons associated with the following cores need to be completely included in the delineated benthic risk areas based on model agreement of hits: SDDC25SS, SDUD27SS, C525, G259, SDDA17SS, DGS-03SC, & DGS-36SC. DGS-06 should be included because it also has model agreement of hits and is surrounded by REA 3 areas.

ii. "*The second area where the CBRA boundary deviates from the existing surface Thiessen polygon boundary occurs along this same downstream area where the CBRA makes a sharp upstream turn by sample locations DGS-03SC and offshore from locations G259 and C525. The boundary was drawn at this location to exclude the two non-toxic empirical toxicity sample locations (DGS-02 and DGS-06; Figure 4.4.2-1) located further off-shore of the CBRA boundary. The location of this boundary is consistent with the Portland Harbor draft FS (Anchor QEA 2012a) procedure for weighting the benthic toxicity LOEs such that the empirical toxicity LOE results overrides or takes precedent over the predicted toxicity LOE.*" Location DGS-36SC appears to be associated with a polygon which had a hit with model agreement located near but not at the same location of a bioassay test identified as a REA Level 0 or 1. Therefore, this core needs to be included in the Revised Comprehensive Benthic Risk Area.

**Comment #18 – *Section 4.4.6*** - "*It is important to note that this boundary was developed using surface LOEs. Section 4.6 describes the process for evaluating buried contamination for potential inclusion in the interim Project area and sub-SMAs (discussed in Section 4.5). For the purposes of this EE/CA because the upland risk assessment results are not yet available, the entire portion of riverbank shown in Figure 4.4.6-1 adjacent to the Gasco and Siltronic properties was included within the interim Project Area boundary.*" The U.S. Moorings also needs to be included in these figures and related discussion.

**Comment #19– *Section 4.5.1 –*** "*Potential FMD areas were identified as areas where current or likely future Gasco Sediment Site uses may result in dredging to accommodate vessel access to area docks and related shoreline areas.*" A discussion of the immediate need for dredging to achieve navigation depths necessary for USACE mission requirements needs to be added to this Section. The presence of "Substantial Product" under the entirety of the U.S. Moorings dock will expand the sediment area requiring remediation and will need to be discussed with the USACE to ensure sufficient contamination will be removed. Vessel scour evaluation based on the U.S. Moorings current or potential vessel usage is needed to verify this footprint. The USACE has estimated that scour can impact up to 4 feet below vessel bottoms, although modeling has not been done. See Appendix A to Limited Sediment Investigation at the U.S. Moorings (URS 2003).

**Comment #20 – *Section 4.5.2* –** The U.S. Moorings needs to be added to the discussion of physical feature Sub-SMA designations including docks and the required maintenance dredging needed currently and in the future to prevent vessel scour related contaminant release. The text should also note USACE's intention to coordinate with NW Natural on potential U.S. Moorings dock removal to facilitate sediment remediation.

**Comment #21 – *Section 4.6 – "****As discussed in the Portland Harbor draft FS (Anchor QEA 2012a), other factors such as river currents, propwash, and wave action on shoreline areas were not found likely to cause exposures of buried contamination.*" The USACE disagrees with this statement as this is an incorrect assumption for the U.S. Moorings where maintenance dredging of contaminated sediments is needed in order for the U.S. Moorings vessels to use the docks in a manner that meets the USACE mission. The USACE has estimated that scour can impact up to 4 feet below vessel bottoms, although modeling has not been done. See Appendix A to Limited Sediment Investigation at the U.S. Moorings (URS 2003).

**Comment #22 –*Section 4.6.1.*** "*Two potential FMD areas outside the navigation channel, the Gasco dock and the U.S. Moorings dock (as discussed in Section 2) and shown on Figure 4.5-1. The Portland Harbor draft FS (Anchor QEA 2012a) identified potential FMD depths of -30 CRD and -40 CRD (-24.75 feet and -34.75 feet NAVD88, respectively) for the NW Natural dock and the U.S. Moorings dock, respectively. While these potential FMD areas may never be dredged in the future, they are a reasonable estimate of the potential for maintenance dredging to reveal potential buried contamination…. For potential FMD areas with navigation depths equal to the current authorized navigation channel depth of -40 feet CRD, a larger interval of 10 feet below the required FMD navigation depth was evaluated to account for potential future FMD*

*deepening that might occur after the proposed deepening of the navigation channel occurs…. Additionally, the average concentration of sediments removed by maintenance dredge activities within potential FMD areas was estimated in order to understand how contaminant levels might impact future maintenance dredging operations or material disposal decisions. If the concentrations in maintenance dredge material were sufficiently high, it might be more appropriate to include such areas in sub-SMAs rather than to leave contamination to be handled during maintenance dredging operations. The average concentration of potential maintenance dredged sediments was calculated by averaging the subsurface concentrations of sediments in each potential FMD area outside of sub-SMAs located in the interval between the surface and 3 feet below the required navigation depth. These concentrations were compared to the RALs for each sub-SMA. As with the above analysis, a RAL exceedence factor (analytical result divided by the associated RAL) of two times the RAL for these average concentrations was used to identify areas that may need to be added to sub-SMAs for the same uncertainty reasons discussed above. Consistent with the Portland Harbor draft FS (Anchor QEA 2012a), a maximum point comparison was not made, given that maintenance dredging tends to combine sediments over broader areas such that single point concentrations are not representative.*"

i. The U.S. Moorings footprint in this figure is insufficient and it doesn't accurately portray the extent of substantial product or the navigation channel requirements on the U.S. Moorings property. Dredging is needed immediately to prevent further impact on the USACE mission requirements. Remove wording "*while these potential FMD areas may never be dredged in the future*," and "*they are reasonable estimate of potential maintenance dredging...*".

ii. The assumption of 3 ft directly below the expected maintained navigation depth needs to be discussed to ensure this will be consistent with future intended use of the area.

iii. Bullets 1 and 2 on this page need to be recalculated for an expanded U.S. Moorings applicable footprint based on substantial product and benthic risk assessment boundary comments related to Figure 4.4.2-1.

iv. Figure 4.5-1 does not show the maintenance dredging areas required to allow for berthing at the U.S. Moorings site. This needs to be revised.

v. The EE/CA does not appear to address potential future maintenance dredging or deepening within the federal navigation channel. The USACE has congressional authority to deepen the navigation channel by three feet including two additional feet of advanced maintenance dredging. The GASCO remedy should remove substantial product in the channel and those materials which would impact the potential deepening of the channel.

**Comment #23 – *Section 4.6.2 – pg 97-98.*** "*For the average value comparison, the average MQ concentration over the portion of the navigation channel within the Gasco Sediments Site Area of Interest was assessed*." This evaluation needs to be revised to include the navigation channel related to the U.S. Moorings property.

**Comment #24 –*Section 5.1.1.1, pg 105, last bullet – "Model-Predicted Long-Term Recovery Rates.*** Setting incoming sediment concentrations at zero may not be appropriate and will likely over-predict natural recovery potential. Does EPA concur with this assumption?

**Comment #25 – *Section 5.2.2 pg. 109 1st paragraph.*** Need to include information on the application of In Situ Treatment at the U.S. Moorings given its use as an active berthing area.

**Comment #26 – *Section 5.3.2 pg. 112 below 1st line.*** Mention the U.S. Moorings berthing requirement at this location and how it would impact implementability of EMNR.

**Comment #27 – *Section 5.4.1 pg. 114 below 2nd paragraph.*** Since the U.S. Moorings sediment does not have hydraulic control, assumptions noted here are incorrect and need to be revised and discussed.

**Comment #28 – *Section 5.4.2 pg. 115 and 116.*** Include a specific discussion of the U.S. Moorings within this section.

**Comment #29 – *Section 5.5.1.2 pg. 120, near 2nd bullet*** – "*Only two adjacent cores within the interim Project Area contain DNAPL in an area where the groundwater modeling shows low-level net seepage following implementation of the upland groundwater source control system.*" These locations need to be noted and a discussion provided of why this is acceptable.

**Comment #30– *Section 5.5.2 pg. 121 after 1st sentence.*** Similar to previous comment, note location of area where model predicts net seepage of groundwater and discuss implications.

**Comment #31 – *Section 5.5.3 pg. 121 after 2nd paragraph.*** A statement needs to be added that active capping is not applicable for the U.S. Moorings area without sediment removal to a level sufficient for future vessel berthing requirements.

**Comment #32 – *Section 5.6.2 pg. 124. 1st paragraph*** – A discussion regarding the implementability of sediment removal related to the U.S. Moorings at this location should be added. The USACE is willing to discuss potential dock removal at the U.S. Moorings to facilitate sediment removal.

**Comment #33 – *Section 5.6.2.1 pg. 126 after 1st paragraph-*** The USACE is willing to discuss potential dock removal at the U.S. Moorings to facilitate sediment removal.

**Comment #34 – *Section 6.1 pg. 149 after 3rd bullet.*** "*The boundary was not specifically expanded for the presence of substantial product.*" It does not appear acceptable for any alternative besides Alternative 1 to not include removal of substantial product - this should be a minimum requirement of the alternatives. Does EPA concur that EE/CA final sediment remedies do not need to address removal of substantial product?

**Comment #35 – *Section 6.4.4. pg. 165 after 1st paragraph.*** Given that the EE/CA proposes the Final Gasco sediment remedy, the EE/CA should include the addition of an interceptor trench associated with upland source control effort for the U.S. Moorings property on which the Gasco sediment remedy relies.

**Comment #36– *Section 7.2.1. pg. 178 after bullets.*** The text should discuss the effectiveness of the proposed alternatives at removing high concentrations of cyanide and preventing migration. There should be a discussion of the uncertainties of using BaPEq for assessing alternatives at risk reduction related to all Gasco related contamination.

**Comment #37 – *Section 7.2.1 pg. 179. After 2nd paragraph.*** "*The evaluations conducted using BaP and naphthalene projections are intended to be representative of the outcomes for the full list of COCs present at the Gasco Sediments Site.*" Provide discussion of these two indicator chemical as they relate to cyanide contamination extent and mitigation effectiveness.

**Comment #38 – *Section 7.2.2.3.1 pg. 186 after 1st full paragraph.*** Add a discussion of the time until active cap becomes saturated and thereafter may fail to prevent contaminant flux and or may allow potential DNAPL movement.

**Comment #39 – *Section 7.2.4.2.2 pg. 196. Bottom of page.*** Revise this discussion to account for the U.S. Moorings vessel usage.

**Comment #40 – *Section 7.2.6.2.2 pg. 203 after 1st paragraph.*** Two to 4% release rates need to be correlated with concentrations in water and expected sediment recontamination, since 2% could relate to acceptable concentrations in water whereas 4% could relate to highly unacceptable concentrations in water. Please add further discussion.

**Comment #41 – *Section 7.2.7.2.2 pg. 205.*** There should be a discussion regarding how capping of highly contaminated areas will have lower implementability over time due to increased efforts and costs for implementing ICs and required maintenance/monitoring to ensure effectiveness.

**Comment #42 – *Section 7.3.1 pg. 207***

i. ***After 1st paragraph.*** Needs to state the time needed to meet long term goals rather than just saying that these goals will be met.

ii. ***After 2nd paragraph.*** Should note short term impacts as compared to other alternatives.

**Comment #43 – *Section 7.3.1 pg. 208. 2nd paragraph.*** Clarify whether Alternative 1 includes upland source control.

**Comment #44 – *Section 7.3.2 pg. 208. After 2nd bullet.*** State whether this alternative provides protection of benthic and other ecological receptors. Information on what Alternative 1 does not achieve also needs to be summarized.

**Comment #45 – *Section 7.4.6 pg. 216 top of page.*** *"Given that this alternative relies on MNR in the navigation channel, there may be some implementation issues related to any potential future navigation channel dredging. However, many portions of the navigation channel in Portland Harbor are not currently maintained to their full depth, because the existing water depths support all ongoing uses in those areas. The channel in front of the Gasco dock is one such area, and there is no need to deepen this area to support ongoing or future anticipated uses."* There is a current need for maintenance dredging at the U.S. Moorings and potential deepening of required maintenance dredging area near docks for future use, which should be noted here. In addition, The EE/CA does not address potential future maintenance dredging or deepening within the federal navigation channel. The USACE has congressional authority to deepen the navigation channel by three feet including two additional feet of advanced maintenance dredging. The GASCO remedy should remove substantial product in the channel and those materials which would impact the potential deepening of the channel.

**Comment #46 – *Section 8.6 pg. 263. 2nd bullet.*** *"Under Alternative 4, large scale removal around the U.S. Moorings and Gasco docks may cause dock instability, impacts to business operations, and may require additional measures to ensure the stability of the existing dock."* Revise the text to note that currently contaminated sediment is impacting business operations at the U.S. Moorings and that the USACE is willing to coordinate potential dock removal to facilitate removal of contaminated sediments.

**Comment #47 – *Section Table 9.2-1.*** The no-action alternative does not pass the threshold criteria of overall protection of human health and the environment and compliance with ARARs. As currently described, the Draft EE/CA would allow principal threat material to remain in the U.S. Moorings vessel berthing areas which has a high potential for contaminant remobilization. Each of the alternatives presented in the EE/CA needs to account for removal of substantial product within berthing areas. The EE/CA does not put enough emphasis on removal of substantial product, nor does it account for needed vessel activities and maintenance dredging. The Draft EE/CA's simplified risk reduction of the proposed alternatives does not fully evaluate the short and long-term risk to ecological and human receptors from exposure to remaining contaminated groundwater and sediment. It is not clear that the approach used within this EE/CA was completed in a manner that ensures short and long-term protectiveness will be achieved.